Title Slide: NCI Implementation Science Approaches to Integrating Research into Practice and Policy

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Slide 1: Introduction to the Implementation Science Team

[Image] A tree map of the Division of Cancer Control and Population Sciences (DCCPS) program and branch leadership. Russ Glasgow, Deputy Director of Implementation Science is shown as leadership within the Office of the Director. [End Image]

Slide 2: Implementation Science Team Staff

[Table]

Name	E-mail
Russell Glasgow, PhD Deputy Director for Implementation Science	russ.glasgow@nih.gov
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Cynthia Vinson, MPA Public Health Advisor	cvinson@mail.nih.gov

[End Table]

Slide 3: Implementation Science Team Vision

To achieve the rapid integration of scientific evidence, practice, and policy, with the ultimate goal of improving the impact of research on cancer outcomes and promoting health across individual, organizational and community levels.

Slide 4: Implementation Science Team Priority Areas

BUILD:

- Build the science of implementation science (IS) through conceptualization, funding initiatives, methods that translate, publications and presentations.

PARTNER:

- Establish robust partnerships of community members, practitioners, decision makers, and researchers.

TRAIN:

- Develop ongoing training Networks for both researchers and practitioners.

Slide 5: BUILD - Goal: Change the Research Paradigm (shift from efficacy to systems approaches)

Short Term Objectives:

- Publish ≥5 articles in leading journals and present at ≥10 major national meetings on new IS concepts
- Continue to be a key planner and supporter of NIH D&I Meeting and related NIH/HHS initiatives to increase attention to and support of IS by NIH/HHS leaders, researchers, and the public

Long Term (2015) Objectives:

- Increase # of cancer-relevant IS grant submissions to PAR by 33%
- Increase # of funded cancer-relevant grants proposals to D&I PAR (and other mechanisms) by 25%
- Increase # of accepted cancer-relevant abstracts for presentation at D&I conference by 25%

Slide 6: The Major Cross-NIH D&I Funding Announcement

- R01 - PAR 10-038 ($500k per annum up to five years)
  R03 - PAR 10-039 ($50K per annum up to two years)
  R21 - PAR 10-040 ($275K up to two years)
- Participating Institutes: NIMH, NCI, NIDA, NIAAA,
  NIAID, NHLBI, NINR, NIDDK, NINDS*, NIDCD,
  NIDCR, NCCAM, FIC & Office of Behavioral & Social Sciences
  Research
- Starting October 2010, new standing review committee, Dissemination and Implementation Health Research
- Three submission dates per year: **February, June, October**

Slide 7: Dissemination and Implementation Measures and Methods Initiative

[Image] Screenshot of GEM homepage. [End Image]
https://www.gem-beta.org/ (GEM Homepage)
http://cancercontrol.cancer.gov/IS/resources.html (IS Team Website)

Slide 8: What, Why, and Who

What is the D&I Measures and Methods Initiative?

- Purpose: Bring together an international community of researchers and practitioners to create a growing and evolving resource for standardized, vetted D&I measures that can lead to comparable datasets and facilitate collaboration and comparison across disciplines and regions.
  The D&I Measures and Methods Initiative and resource enables researchers and practitioners to:
    - Identify and define constructs relevant to D&I research and practice;

- Learn about, comment on, and rate existing measures for D&I;
- Share new D&I measures;
- Identify missing D&I measures;
- Learn about strategies/methods relevant to D&I

Why should I get involved?

- If you are interested in advancing the D&I field, this Initiative is an excellent way to contribute to the field and engage with colleagues. The D&I Measures and Methods Initiative gives you access to D&I constructs, measures, and methods developed by other colleagues and also provides you with a platform to share your own D&I measures.

Who Should Participate?

- Researchers and practitioners involved or interested in D&I research

Slide 9: PARTNER - Goal: Assist other projects to be more likely to improve health outcomes, succeed in reducing health disparities, and be sustainable

Short Term Objectives:

- Be a key contributor on two trans-HHS efforts related to IS
- Support CPCRN to make identified contributions to local communities in 5 states
- Have at least one trans-NIH meeting or funding initiative on CER-T linking primary care and public health approved (e.g. a PAR or RFA)

Long Term (2015) Objectives:

- Establish and maintain 1 new national partnership per year involving multiple DCCPS branches and other institutes to support innovative IS initiatives (w/ HRSA, VA, CMS, and ACS) as well as continued partnership with CDC

Slide 10: TRAIN - Goal: Establish a strong, supportive, evolving, virtual IS community

Short Term Objectives:

- Have two successful years of the NIH Summer D&I Research Institute
- Continue NIH D&I Annual technical assistance workshop; and improve evaluation ratings
- Provide training and networking for an increased # of researchers, public health practitioners, and community members via R2R, Cancer Control P.L.A.N.E.T., IS Team website and other vehicles
- Organize and evaluate pilot mentorship program for 6 mentee-mentor pairs

Long Term (2015) Objectives:

- Train at least 140 promising new investigators and 40 established cancer-relevant investigators in IS
- Train 1,000 public health practitioners in IS knowledge and skills

[Images] Screenshots of the Cancer Control P.L.A.N.E.T. homepage; Research to Reality Homepage; and Training Institute for Dissemination and Implementation Research in Health homepage. [End Image]

Slide 11: Training Institute for Dissemination and Implementation Research in Health

[Image] Screenshot of Training Institute for Dissemination and Implementation Research in Health homepage http://conferences.thehillgroup.com/OBSSRinstitutes/TIDIRH2012/index.html. [End Image]. All sessions available on line with refs, notes, etc.

Slide 12: Training Institute for Dissemination and Implementation Research in Health Continued

Institute Goals

- Provide participants with thorough grounding in conducting D&I research
- Faculty and guest lecturers consist of leading experts in:
    - Theory
    - Implementation and evaluation approaches
    - Creating partnerships and multi-level, transdisciplinary research teams
    - Research design, methods and analyses
- After training participants expected to help grow the field of D&I research by:
    - Giving talks
    - Leading seminars
    - Forming new collaborations
    - Mentoring
    - Submitting new D&I grant proposals

http://conferences.thehillgroup.com/OBSSRinstitutes/TIDIRH2012/index.html

Slide 13: Updates to P.L.A.N.E.T. and RTIPs

- New version of Cancer Control P.L.A.N.E.T. and RTIPs launching in April/May 2012.
- Major changes on site include:
    - Removal of "Steps" on P.L.A.N.E.T.
    - Removal of Research and Practice Partners formerly found on Step 2.
        - Now features Research to Reality (R2R) in place of linking to Partners
    - Including RE-AIM on both sites
        - RTIPs programs scores on RE-AIM
        - RE-AIM tool for program planners included on RTIPs

Slide 14: Cancer Control P.L.A.N.E.T.

[Image] Screenshot of Cancer Control PLANET website. http://cancercontrolplanet.cancer.gov/ [End Image]

Slide 15: Research to Reality (R2R)

[Image] Screenshot of Research to Reality website homepage http://researchtoreality.cancer.gov [End Image]

Slide 16: Research Tested Intervention Programs (RTIPs)

[Image] Screenshot of Research Tested Intervention Programs (RTIPs) homepage http://rtips.cancer.gov/rtips. [End Image]

Slide 17: Research Tested Intervention Programs (RTIPs)

[Image] Screenshot of Research Tested Intervention Programs (RTIPs) homepage continued http://rtips.cancer.gov/rtips. [End Image]

Slide 18: Implementation Science Models

- T0 – T4 – Knowledge Integration Process
- Evidence Integration Triangle
- Primary care – Community

Slide 19: Knowledge Integration Process

The framework for the continuum of multidisciplinary translation research builds on previous characterization efforts in genomics and other areas in health care and prevention. The continuum includes four phases of translation research that revolve around the development of evidence-based guidelines. “Population health impact” is connected to “Discoveries from multiple disciplines” (T0) which is connected to “Promising interventions (tests, drugs, policies, behavioral) efficacy” (T1) which is connected to “Evidence based recommendations, policies, and Guidelines; effectiveness” (T2), which is connected to “Organizational & community systems; Prevention and QI programs” (T3). “Organizational & community systems; Prevention and QI programs” completes the circle and is connected to “Population health impact” (T4). At the center of the figure is are three connecting circles, (1) Integration of basic, clinical & population research; (2) Stakeholder engagement; and (3) Mixed methods, modeling & innovative designs. The three circles are connected to each box on the pentagon.
(Modified from: Khoury MJ, Gwinn M, Ioannidis JP American Journal of Epidemiology, 2010, 172:5 pg. 517-24)

Slide 20: Evidence Integration Triangle (EIT)

[Image] Intervention (Program/Policy) (e.g. design; key components; principles guidebook; internal and external validity) has a bi-directional connection to "Practical Progress Measures (e.g. actionable & longitudinal measures)". "Practical Progress Measures" has bi-directional connection to "Participatory Implementation Process" (e.g. stakeholder engagement; team-based science; CBPR; patient centered care). "Implementation Process" has a bi-directional connection to "Intervention (Program/Policy)". Each bi-directional arrow displays the word “Feedback” above it. This completes the circular connection from "Intervention (Program/Policy)" to "Practical Progress Measures" to "Implementation Process" back to "Intervention (Program/Policy)". Two ovals with the words, "Evidence and Stakeholders" are in the middle of the triangle. A circle encompasses the whole triangle and lists the six Multi-level contexts: (1) Intrapersonal/biological; (2) Interpersonal/Family; (3) Organizational; (4) Policy; (5) Community/Economic; (6) Social/Environment/History.[End Image]

Glasgow, R, Green, Taylor, Stange, Am J Prev Med, in press

Slide 21: EIT Conclusions

- The evidence-based movement is a good start, but only gets us so far
- To make greater progress, two other elements also need attention:
    - Practical MEASURES to track progress, and
    - Implementation PROCESSES that use partnership principles.
    - These 3 legs of the “EIT” are each necessary but not sufficient by themselves.

Slide 22:Evidence Integration Triangle (EIT) - A Patient-Centered Care Example

[Image] Intervention Program/Policy (Evidence-based decision aids to provide feedback to both patients and health care teams for action planning and health behavior counseling) has a bi-directional connection to "Practical Progress Measures (Brief, standard patient reported data items on health behaviors & psychosocial issues -- actionable and administered longitudinally to assess progress)". "Practical Progress Measures" has bi-directional connection to "Participatory Implementation Process" (Iterative, wiki activities to engage stakeholder community, measurement experts and diverse perspectives). "Implementation Process" has a bi-directional connection to "Intervention (Program/Policy)". Each bi-directional arrow displays the word “Feedback” above it. This completes the circular connection from "Intervention (Program/Policy)" to "Practical Progress Measures" to

"Implementation Process" back to "Intervention (Program/Policy)". Two ovals appear in the center of the triangle: (1) Evidence: US Preventive Services Task Force recs. for health behavior change counseling; evidence on goal setting & shared decision making; and (2) Stakeholders: Primary care (PC) staff, patients and consumer groups; PC associations; groups involved in meaningful use of EHRs, EHR vendors. A circle encompasses the whole triangle and lists the multi-level context for this example: Dramatic increase in use of HER; Primary Care Medical Home; CMS funding for annual wellness exams; Meaningful use of EHR requirements.[End Image]

Glasgow RE, Green LW, Taylor MV, Stange KC. AJPM (in press, 2012)

Slide 23:Team Science Project on Patient Reported Measures to Facilitate Patient-Centered Care

- NCI: Russ Glasgow, Brad Hesse, Kurt Stange, Rick Moser, Martina Taylor
- OBSSR: Maureen Boyle, Robert Kaplan, Holly Jimison
- NIMH: David Chambers
- Harvard School of Public Health/Society of Behavioral Medicine: Karen Emmons
- University of Vermont: Rodger Kessler
- Virginia Tech University: Paul Estabrooks
- Virginia Commonwealth University: Alexander Krist
- UCLA School of Public Health: Roshan Basani, Hector Rodriquez

Slide 24:Why Collect and Standardize Behavioral and Psychosocial Measures in Primary Care?

- Screening and collection of standard data on behavioral and psychosocial issues will facilitate:
    - Brief interventions in primary care; goals of PCMH
    - Patient-centered shared clinical decision-making
    - Improved patient self-management support
    - Population health management
    - Research
        - Comparative Effectiveness
        - Epidemiology
        - Personalized medicine (through large data sets combining health behavior data with medical and biological information)

Slide 25:Three-Phased Process Figure

Phase 1: Expert panels reviewed existing measures and made recommendations
Phase 2: Stakeholders used wiki tool (GEM) to provide comments and ratings, suggest alternatives
Phase 3: Town hall meeting for discussions with range of stakeholders

Slide 26:Participating Organizations

- Office of Behavioral and Social Sciences Research (OBSSR), NIH
- National Cancer Institute (NCI), NIH
- Society of Behavioral Medicine (SBM)
- American Academy of Family Physicians (AAFP)
- American College of Sports Medicine (ACSM)
- Agency for Healthcare Research and Quality (AHRQ)
- Center for Advancing Health (CFAH)

- Centers for Medicare & Medicaid Services (CMS)
- Consumers Union
- Geisinger Health System
- Group Health Cooperative
- Health Research Services Administration (HRSA)
- HealthPartners
- North American Primary Care Research Group (NAPCRG)
- National Alliance on Mental Illness (NAMI)
- **National Committee for Quality Assurance (NCQA)**
- National Heart, Lung, and Blood Institute (NHLBI)
- National Institute of Mental Health (NIMH), NIH
- National Institute of Nursing Research (NINR), NIH
- National Institute on Drug Abuse (NIDA), NIH
- **National Quality Forum (NQF)**
- Preventative Cardiovascular Nurses Association (PCNA)
- **Patient Reported Outcomes Measurement Information System (PROMIS) Network**
- **Robert Wood Johnson Foundation (RWJF)**
- **Society for General Internal Medicine (SGIM**)
- Society of Teachers of Family Medicine (STFM)
- Substance Abuse and Mental Health Services Administration (SAMHSA)
- US Department of Health & Human Services (HHS)
- **US Department of Veterans Affairs (VA)**

Slide 27:Evaluation Criteria

[Table]

GOLD STANDARD MEASURE RATING CRITERIA - For Primary Research Focus	PRACTICAL MEASURE RATING CRITERIA – For Real World Application[1]
Reliable Especially test-retest (less emphasis on internal consistency)	**Feasible*** Brief (generally 2-5 items or less); easy to administer/score/interpret
Valid Construct validity, criterion validity, performed well in multiple studies	**Important to Practitioners and Stakeholders*** Relevant to health issues that are prevalent, costly, challenging; helpful for decision makers or practice
Broadly Applicable Available in English and Spanish, validated in different cultures and contexts; norms available; no large literacy issues	**Actionable** Based on information collected, realistic actions can be taken, e.g., immediate discussion, referral to evidence-based on-line or community resources
Sensitive to Change* (if applicable) Longitudinal use, for performance tracking over time	**User Friendly** Patient interpretability; face valid; meaningful to clinicians, public health officials, and policy makers
Public Health Relevance Related to Healthy People 2020 goals, key IOM objectives or national priorities	**Low Cost*** Publicly available or very low cost to use, administer, score, and interpret
	Enhances Patient Engagement

	Having this information is likely to further patient engagement
	Do No Harm Can likely be collected without interfering with relationships, putting respondents at risk, or creating unintended negative consequences

[1] For use in pragmatic studies and real world settings where there are many competing demands, many other measures to assess etc. For pragmatic rating, still consider gold standard criteria, but weight criteria on right most heavily

NOTE: For both Gold Standard and Practical Measure Use, give criteria with ***** heaviest weighting in making your ratings

[End Table]

Slide 28:Grid-Enabled Measures (GEM): Science 2.0

We live in a new connected world that is supported by collaborative web technology that allows to work together in different ways.

[Image] Computer screen and search box with the word, “Blog” written.[End Image]

[Image] Wikipedia screen shot [End Image]

[Image] Screenshot of Amazon Customer Review Scores [End Image]

Slide 29:Grid-Enabled Measures (GEM): Science 2.0 Continued

[Image] Screenshot of GEM homepage. https://www.gem-beta.org/ [End Image]

Underlying principles:

- Architecture for participation
- Data driven decisions
- Wisdom of the masses (crowd sourcing)

Slide 30: Consensus Results

- Consensus was reached on Common Data Elements for 9 of the 13 constructs (27 total items)
  - 13 items (collect annually)
  - 1 item (collect at each visit)
  - 7 demographic items (collect at first visit only)
  - 6 demographic items (review annually)
- Additional work needed:
  - Patient goals, Medication Adherence, Health Literacy/Numeracy, Quality of life
  - Several demographic variables

Slide 31: Domains for Patient Reported Survey

[Table]

Domain	Final Measure (Source)
1. Demographics	9 items: Sec, date of birth, race, ethnicity, English Fluency, Occupation, household income, Martital status, education, address, insurance status, veteran's status. Multiple sources including Census Bureau, IOM, and *National Health Interview Survey (NHIS)*
2. Overall Health Status	1 Items: BRFSS Questionnaire
3. Eating Patterns	3 Items: Modified from Starting the Conversation (STC) (Adapted from Paxton, AE et al. *Am J Prev Med*. 2011: 40(1): 67-71)
4. Physical Activity	2 Items: The exercise Vital Sign (Sallis, R. *Br J Sports Med*. 2011; 45(6): 473-474)
5. Stress	1 Item: Distress Thermometer (Roth AJ. Et al. Cancer. 1998; 15 (82): 1904-1908)
6. Anxiety and Depression	4 Items: Patient health questionnaire – Depression and Anxiety (PHQ-4) (Kroenke K, et al. *Psychosomatics* 2009; 50(6): 613-621.)
7. Sleep	2 Items: (a) Adapted from BRFSS; (b) Neuro-QOL (Item PQSLP04)
8. Smoking/Tobacco Use	2 Items: Tobacco Use Screener (Adapted from YRBSS Questionnaire)
9. Risky Drinking	1 Item: Alcohol Use Screener (Smith PC, et al. *J Gen Intern Med* 2009; 24(7): 783-788.)
10. Substance Use	1 Item: NIDA Quick Screen (Smith PC, et al. Arch Intern Med. 2010, 170(13): 1155-1160)

[End Table]

Slide 32: Next Steps

[Image] A flow chart. Draft Common Data Elements (CDEs) has an arrow to "Align with Related Efforts" and to "Cognitive Testing/Focus Groups". "Cognitive Testing/Focus Groups" leads to "Field Test Set of CDEs." Below, "Promote Software Development" has a bi-directional arrow to "Feasibility Tests and Pragmatic Trial." These boxes are then connected to the one-directional arrow between "Publications" and "Encourage Implementation (HMOs, VA, IHS, CMS)." Lastly, "Publications" and "Encourage Implementation (HMOs, VA, IHS, CMS)" has a one-directional arrow ending at "Widespread Use of CDEs in Primary Care." [End Image]

Slide 33: Federally Qualified Health Centers (FQHC) Study

[Image] A flow chart. Running across the top of the page is a box with the text: "Study Setting: 4 Federally-qualified health centers (FQHCs) in Southern California. National Partners: a number of additional sites located nationally: VA in Bedford, MA; practice-based research network clinics in Vermont and Virginia." The lower half of the page is divided into two phases. Phase One (3/12-5/12) has a box with the text, "Pre-Implementation Interviews with Staff and Providers (n = 5 per site)." Phase Two (5/12-9/12) has four boxes with arrows running down between boxes 1, 2, and 3. (1) Implementation of Health Update (PROs) with 50 patients per site (1-3 week period); (2) Solicit feedback through brief patient (all) questionnaire and (3) Invite subgroup of patients to participate in a feedback interview. Box 1, Implementation of Health Update, also has a one-directional arrow to box 4, Post-Implementation interviews with Staff and Providers (n = 5 per site). There is a uni-directional arrow going from Phase 1 to Phase 2.

Slide 34: Guidance for Providers

Scoring Template

- Annotated clinician version of "PRO measures" indicating out of range values to assist in scoring

Provider Guidance Form

- 1 page front & back, help to interpret "PRO" results & guide follow-up assessment/treatment

Provider Resource Packet

- Detailed hard copy/electronic resource to summarize evidence for follow-up/treatment, links to available web resources, inclusion of local resources at site discretion

[Image] Professional speaking with patient in office setting [End Image].

Slide 35: Planned Pragmatic Implementation Trial involving CPCRN

- Paired primary care clinics: half FQHCs; half other
  - Each clinic recruits 125-150 patients
  - Randomized **pragmatic study***- delayed intervention- assess at 0, 4 and 8 months
  - Clinics selected to be at different stages of EHR implementation
  - Key outcomes include implementation; creation of action plans; patient behaviors and satisfaction
  - Being designed collaboratively with CPCRN centers

Slide 36: Linking Patient, Physician, and Community Programs

[Figure] three boxes form a triangle with connecting arrows. Box 1, "Family, Friend, Peer Network" is connected to box 2, "Health Care System." The connecting arrows indicates this connection is through "Informed Referrals and Support Opportunities" and "Patient Preferences and Status." Box 2, "Health Care System" is then connected to Box 3, "Larger Orgs/Networks" through "Informed Referrals" and "Feedback on Patient Progress." Finally, Box 1 and 3 are connected through "Promotion of targeted Evidence-based Programs" and "Update on Progress." At the center of the triangle is a smaller triangle titled, "Successful PCP- Community Link." At each corner of the triangle by the outside boxes is labeled. By box 1, "Engaged Patient", by Box 2, "Informed, Supportive System" and by Box 3, "Evolving Evidence-Based Community Program and Resources." The entire figure exists within the broader multi-level context identified as: intrapersonal/biological; interpersonal/family; organizational; policy; community/economic; social/environment/historical.

Slide 37: Types of D & I Evidence Needed: 2R's and "RCCT"

- Relevant
- Rigorous and
- Rapid*
- Cost
- Convergent*
- Transparent

Glasgow R, *Annals of Behavioral Medicine, 2008, 35:* 19-25.
Glasgow R, Chambers D. *Clinical and Translational Science*, in press, 2012
http://cancercontrol.cancer.gov/IS/

Slide 38: Questions/Comments

Contact us:

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IS Team Website:

- http://dccps.cancer.gov/is/